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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: VACCINES DERIVED FROM EPITHELIAL CELL MUCIN MUC-1

(57) Abstract: Novel MUC-1 DNA constructs are provided that have reduced homology to native MUC-1. Pharmaceutical compositions containing such MUC-1 constructs are provided.

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INTERNATIONAL SEARCH REPORT

International Application No
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A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 C12N15/12 C07K14/47 A61K31/7088

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 C12N C07K A61K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, Sequence Search, WPI Data, PAJ, BIOSIS, EMBASE, CHEM ABS Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No
X	WO 01/57068 A (APOSTOLOPOULOUS VASSO ; AUSTIN RES INST (AU); MCKENZIE IAN F C (AU); P) 9 August 2001 (2001-08-09) SEQ ID NO:7 page 2 - page 11	1-17
X	WO 00/06723 A (FITZER ATTAS CHERYL ; FRIDKIN MATITYAHU (IL); BAR HAIM EREZ (IL); CARM) 10 February 2000 (2000-02-10) SEQ ID NOs: 44 and 48 page 4 - page 8 page 40 - page 42	1-17

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex

* Special categories of cited documents

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

- *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
- *G* document member of the same patent family

Date of the actual completion of the international search

24 August 2004

Date of mailing of the international search report

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Name and mailing address of the ISA

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INTERNATIONAL SEARCH REPORT

International Application No
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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No
X	WO 01/18035 A (TRANSGENE SA ; IMP CANCER RES TECHNOLOGY LTD (GB)) 15 March 2001 (2001-03-15) SEQ ID NO:4 page 1 - page 6; claims 1-37 page 42	1-17
A	DOLBY N ET AL: "Design and Expression of a Synthetic Mucin Gene Fragment in Escherichia Coli" PROTEIN EXPRESSION AND PURIFICATION, ACADEMIC PRESS, SAN DIEGO, CA, US, vol. 15, no. 1, February 1999 (1999-02), pages 146-154, XP004441752 ISSN: 1046-5928 the whole document	
A	DEML L ET AL: "Multiple effects of codon usage optimization on expression and immunogenicity of DNA candidate vaccines encoding the human immunodeficiency virus type 1 Gag protein" JOURNAL OF VIROLOGY, THE AMERICAN SOCIETY FOR MICROBIOLOGY, US, vol. 75, no. 22, November 2001 (2001-11), pages 10991-11001, XP002270897 ISSN: 0022-538X page 10998 - page 11000	

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Continuation of Box II.1

Although claim 17 is directed to a method of treatment of the human/animal body, the search has been carried out and based on the alleged effects of the compound/composition.

INTERNATIONAL SEARCH REPORT

International application No.
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Box II Observations where certain claims were found unsearchable (Continuation of Item 2 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☒ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

Although claim 17 is directed to a method of treatment of the human/animal body, the search has been carried out and based on the alleged effects of the compound/composition.
2. ☐ Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box III Observations where unity of invention is lacking (Continuation of Item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☒ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/EP2004/002007

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
WO 0157068	A	09-08-2001	US 6548643 B1	15-04-2003
			WO 0157068 A1	09-08-2001
			AU 2987701 A	14-08-2001
			CA 2399026 A1	09-08-2001
			EP 1257565 A1	20-11-2002
			JP 2003533181 T	11-11-2003
WO 0006723	A	10-02-2000	AU 775162 B2	22-07-2004
			AU 5062999 A	21-02-2000
			EP 1100901 A1	23-05-2001
			WO 0006723 A1	10-02-2000
WO 0118035	A	15-03-2001	AU 7651500 A	10-04-2001
			CA 2383737 A1	15-03-2001
			WO 0118035 A2	15-03-2001
			EP 1210430 A2	05-06-2002
			JP 2003510094 T	18-03-2003